SPECTRUM®

Novell LANtern Network Monitor Management Module Guide

CABLETRON SYSTEMS

SYSTEMS

The Complete Networking Solution™

Notice

Cabletron Systems reserves the right to make changes in specifications and other information contained in this document without prior notice. The reader should in all cases consult Cabletron Systems to determine whether any such changes have been made.

The hardware, firmware, or software described in this manual is subject to change without notice.

IN NO EVENT SHALL CABLETRON SYSTEMS BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING BUT NOT LIMITED TO LOST PROFITS) ARISING OUT OF OR RELATED TO THIS MANUAL OR THE INFORMATION CONTAINED IN IT, EVEN IF CABLETRON SYSTEMS HAS BEEN ADVISED OF, KNOWN, OR SHOULD HAVE KNOWN, THE POSSIBILITY OF SUCH DAMAGES.

Virus Disclaimer

Cabletron has tested its software with current virus checking technologies. However, because no anti-virus system is 100% reliable, we strongly caution you to write protect and then verify that the Licensed Software, prior to installing it, is virus-free with an anti-virus system in which you have confidence.

Cabletron Systems makes no representations or warranties to the effect that the Licensed Software is virus-free.

Restricted Rights Notice

Contents

Preface

Chapter 1   Introduction

Chapter 2   Device View

Chapter 3   Configuration View

Chapter 4   Event and Alarm Messages

Chapter 5   Application View

Appendix A   Statistical Reports

Index

Figures

Chapter 2   Device View

Tables

Chapter 1   Introduction

Chapter 2   Device View

Chapter 4   Event and Alarm Messages

Preface

Use this guide if you are going to manage a Cabletron Ethernet Hub through SPECTRUM. Before reading this guide, you should be familiar with SPECTRUM's functions and operation.You should also be familiar with any network management and hardware requirements described in the related hardware documentation.
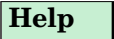
What is in this Guide

The following chapter descriptions outline the organization of the *Cabletron Ethernet Hubs Management Module Guide*.

Chapter	Description
Chapter 1 **Introduction**	Describes the Cabletron Ethernet Hubs management module and model types.
Chapter 2 **Device Views**	Describes the Device Views available for each Cabletron Ethernet Hub model type.
Chapter 3 **Application Views**	Describes the Application Views available for each Cabletron Ethernet Hub model type.
Chapter 4 **Configuration Views**	Describes the Configuration View available for each Cabletron Ethernet Hub model type.
Chapter 5 **Diagnostic Views**	Describes the Diagnostic View available for each Cabletron Ethernet Hub model type.
Chapter 6 **Performance Views**	Describes the Performance View available for each Cabletron Ethernet Hub model type.
Chapter 7 **Event and Alarm Messages**	Contains a listing and explanation of the alarm and event messages generated in the Event Log or Alarm View for the Cabletron Ethernet Hub model types.

Conventions

In this manual, the following conventions are used:

- Command names are printed in **bold**; for example, **Clear** or **Save & Close**.

- Menu selections to access a view are printed in **bold**; for example, **Configuration** or **Detail**.

- Buttons are represented by a shadowed box; for example, **Help** .

Related SPECTRUM Documentation

When using this guide, you should have a clear understanding of SPECTRUM functionality and navigation techniques as described in the Administration, Operation, and following documentation:

SPECTRUM Report Generator User's Guide

Getting Started with SPECTRUM for Operators

Getting Started with SPECTRUM for Administators

How to Manage Your Network with SPECTRUM

Other Related Documentation

Refer to the following documentation for more information on managing TCP/IP-based networks:

LAN Troubleshooting Handbook, Mark Miller (1989, M&T Publishing, Inc.)

The Simple Book − An Introduction to Management of TCP/IP-based Internets, Marshall T. Rose, Performance Systems International, Inc.

Computer Networks, Andrew S. Tanenbaum, Prentice-Hall, Inc.

Local Area Networks, Architectures and Implementations, James Martin & Kathleen K. Chapman for the Arben Group, Inc. (1989, Prentice-Hall, Inc.)

Getting Help

For additional support for SPECTRUM products, or to make comments or suggestions regarding SPECTRUM or this manual, contact Cabletron Systems Technical Support via one of the following means:

Location	Mail	FAX	Telephone
North America	Cabletron Systems, Inc. P. O. Box 5005 Rochester, NH 03866-5005 **E-mail:** spectrum-support@ctron.com	603-337-3075	603-337-3500
Europe	Cabletron Systems, Ltd. Network House Newbury Business Park London Road, Newbury Berkshire, England RG13 2PZ **E-mail:** eurospec@ctron.com	(*)-44-635-552062	(*)-44-635-580000
Pacific	Cabletron Systems, Inc. Allambie Grove Estate 25 French's Forest Road East French's Forest, NSW 2086 Sydney, Australia **E-mail:** spectrum-support@ctron.com	(*)-61-2-950-5950	(*)-61-2-950-5900
Japan	Cabletron Systems, KK JTB Building 9F 164 Maranouchi Chiyoda-ku Tokyo 100 Japan **E-mail:** spectrum-support@ctron.com	(*)-81-3-3240-1985	(*)-81-3-3240-1981
Singapore	Cabletron Systems, Inc. 85 Science Park Drive #03-03/04 The Cavendish Singapore 051 **E-mail:** spectrum-support@ctron.com	(*)-65-7763382	(*)-65-7755355
Germany	Cabletron Systems GmbH Dreieich Park Im Gefierth 13d 63303 Dreieich Frankfurt, Germany **E-mail:** spec-germany@ctron.com	(*)-49-6103/991-229	(*)-49-6103/991-269
*International Operator Code			

Questions About SPECTRUM Documentation?

Send your questions, comments or suggestions regarding SPECTRUM documentation to the Technical Communications Department directly via the following internet address:

spectrum-techdocs@ctron.com

Chapter 1

Introduction

This chapter describes the SPECTRUM Management Module software for the Novell LANtern Network Monitor and LANtern Network Monitoring Module (NMM) for the Cabletron Systems MMAC. It also provides the Model Type Name assigned to the LANtern in SPECTRUM. The Model Type Name refers to the template used to specify device attributes, actions, and associations for device models in SPECTRUM.

LANtern Management Module

NOTE

If you are running a previous version of SPECTRUM, the following user interface aspects may differ from those in SPECTRUM version 4.0:

- *Order and names of menu selections*

- *Navigational features (mouse button functionality)*

For information about menu selections and navigating within previous versions of SPECTRUM, refer to the SPECTRUM System User's Guide. *For information about menu selections and navigating within SPECTRUM version 4.0, refer to the* SPECTRUM Menus *guide.*

A management module is a C++ coded software emulation of a physical device. It uses X Windows/OSF Motif based icons to represent this device in the user interface. Management module icons provide:

- Visual status "at a glance" through the use of various color definitions.

- Access to in-depth information on the device's configuration and operating activity.

The management module software allows a network administrator to model, monitor, and manage individual devices or groups of devices on a network.

The LANtern Network Monitor/LANtern NMM Management Module contains all the information necessary to manage Novell LANtern Network Monitor and LANtern NMM devices using SPECTRUM, including a software emulation of the actual LANtern Network Monitor and LANtern NMM device attributes and functionality.

The LANtern Network Monitor/LANtern NMM Management Module supports the Novell LANtern Network Monitor or LANtern NMM devices managed through the SNMP basic network management agent. SPECTRUM bases its management of the Novell LANtern Network Monitor and LANtern NMM on the Management Information Base (MIB), which comes as part of the management module.

Table 1-1 provides the Model Type Name for the LANtern devices and a brief description of the LANtern versions supported by the SPECTRUM LANtern management module.

Table 1-1. **Model Type Description**

Model Type Name	Description
NA_Nov_LANtern	Novell LANtern Network Monitor, which acts as a stand alone monitor on an Ethernet segment.
NA_Nov_LANMIM	The Novell LANtern NMM, which when installed in a Cabletron Systems MMAC, monitors the Ethernet segments attached to that MMAC.
IndrctLANtern	The Novell Indirect LANtern model, which allows modelling of the devices on the segment being monitored if those devices do not have SPECTRUM models of their own.

Table 1-2 lists the views in which LANtern device models may be created.

Table 1-2. **Valid Views for Creation and Placement of LANtern Device Models**

View	Model
Location	Room, Rack, or Panel
Topology	FDDI, LAN_802_3, LAN_802_5
Device Topology View	Any Device Topology View
Resource View (pasted)	Workstation or other endpoint device

Table 1-2. **Valid Views for Creation and Placement of LANtern Device Models**

View	Model
Cablewalk View	Coax_Segment or Fanout
Organization	Org_Owns

NOTE

Although the Novell LANtern Network Monitor and LANtern NMM function identically as network monitors, they are treated slightly differently by SPECTRUM because of their physical difference (i.e., one is free-standing and one is installed in an MMAC chassis). The information that you can directly access from the Novell LANtern or LANtern NMM via SPECTRUM is identical, but for the LANtern NMM, SPECTRUM will also poll information regarding the MMAC in which it is installed. This document explains such differences where appropriate.

Chapter 2

Device View

The Device View shows a physical representation of the LANtern NMM installed in a Cabletron MMAC hub chassis and provides menu access to the LANtern NMM generic views. These generic views allow you to access network configuration information, as well as traffic flow and error data for your Novell LANtern Network Monitor. This chapter describes how to use the Device View to view MIMs, access SPECTRUM generic views, and monitor the performance of the LANtern or LANtern MIM.

Since the LANtern NMM (NA_Nov_LANMIM) is installed in a Cabletron hub chassis, it appears in the Device View for that Cabletron hub. The Novell LANtern Network Monitor (NA_Nov_LANtern) does not have a Device View.

Depending on the type of Cabletron hub containing the LANtern NMM, the Device View appears slightly different. The Cabletron hub categories are as follows:

IRM2, IRM3, and IRBM

IRM (both SNMP and Cabletron proprietary protocol)

Device View Perspective

The Device View for a Cabletron hub gives an actual representation of the hub configuration. If the configuration changes (e.g., a LANtern NMM is inserted into or pulled from the hub), a corresponding change is displayed in the hub's Device View after the hub's next poll cycle.

The Device View represents the hub's physical configuration by executing the following procedures:

1. The Device View reads a perspective file called CsDevice.pib, which contains a list of designations for all model types supported in SPECTRUM, along with their appropriate background image files.

NOTE
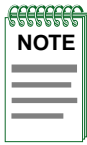
This path (<Perspective Path>/CsDevice.pib) is set in your .Xdefaults or app-defaults/spectrum files.

2. The LANtern NMM model type designation contained in the CsDevice.pib file points to the MIM_LANtern.D3P (<CsIibpath>) perspective file, which contains:

   • The image (.csi) filename for the LANtern NMM. The .csi file is located in a directory defined by your imagepath (<CsImagepath>).

   • The position coordinates for each LED on the LANtern NMM.

3. SPECTRUM's intelligence (using the HASPART relation) causes the Device View to read the model type designation and model type handle for each LANtern NMM installed in the hub chassis.

4. The Device View creates an icon manager that controls each NMM model associated with the hub chassis model.

5. The Device View periodically polls the hub model in the SpectroSERVER database to determine if any configuration changes have occurred. If a configuration change has occurred, the Device View changes correspondingly to match the model in the SpectroSERVER database.

Configuring the LANtern NMM in an IRM or IRBM

To receive LANtern NMM gauge and port information in the IRM or IRBM's Device View logical representation and for the LANtern NMM LEDs to appear "live" in the IRM or IRBM's Device View physical representation, you must assign an IP address to the LANtern NMM installed in the hub chassis as follows:

1. Move the mouse pointer onto the LANtern NMM. Single click the left mouse button to highlight the LANtern NMM.

2. Select **Icon Subviews** from the View menu.

3. Select **MIM Configuration View** from the Icon Subviews menu to access the LANtern NMM Configuration View.

4. Select **Update** from the File menu in the LANtern NMM Configuration View.

5. Enter the IP address of the LANtern NMM device. If you have already created the LANtern NMM as a stand alone icon, enter the same IP address here.
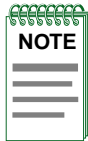
> **NOTE**
>
> *Cabletron recommends assigning a unique model name to the LANtern NMM installed in the hub chassis to easily differentiate it from an independent LANtern NMM icon (NA_Nov_LANMIM) with the same assigned IP address..*

6. Select **Close/Update** from the File menu in the LANtern NMM Configuration View.

7. A Popup Window appears and prompts you whether to save the updated configuration information. Click **OK**.

8. Select **Go Back** from the View menu in the LANtern NMM Configuration View to close this view.

Current LANtern NMM gauge and port information in the IRM or IRBM's Device View logical representation will now be provided. The LANtern NMM LEDs in the IRM or IRBM's Device View physical representation will now appear active.

IRM2 or IRBM Hub Device Views

IRM2 and IRBM hub Device Views present a variety of statistical information on each MIM installed in the hub chassis because of the high level monitoring point intelligence inherent in these hub types. The following sections describe the IRM2 and IRBM hub Device Views.

MMAC Device Panel

The top portion of an IRM2 or IRBM hub Device View containing the LANtern NMM, displays the following information for the hub:

Name	The assigned or user-defined name for the hub containing the LANtern NMM.
Location	The physical location of the hub containing the LANtern NMM.
Net Address	The IP address of the hub containing the LANtern NMM.
Device Type	The model type name of the hub containing the LANtern NMM.

System UpTime The time the hub has been active without failure displayed in the following format:

days+hours:minutes:seconds

A condition status banner surrounding this information displays the condition status color for the hub containing the LANtern NMM. Refer to Table 4-2 for definitions of condition status colors.

In addition, the MMAC Device Panel provides two buttons that allow a user to change the type of statistical information presented in the logical MIM horizontal bar gauges for either the LANtern NMM or the entire hub, as described in the following section. Figure 2-1 shows an example of an IRM2 or IRBM MMAC Device Panel.

Figure 2-1.　　　**The IRM2 or IRBM MMAC Device Panel**

LANtern NMM Logical MIM Representation

When a hub Device View is first opened, it displays each MIM in its logical representation. The LANtern NMM logical representation provides gauge and port information about the LANtern NMM installed in the Cabletron hub instead of presenting a physical image. For information on a Device View's physical MIM representation, refer to the section titled "LANtern NMM Physical MIM Representation." Refer to the section titled "Changing MIM Representations" for information on changing between logical and physical MIM representations. Figure 2-2 provides an example of a LANtern NMM Logical MIM Representation.

A LANtern NMM logical representation provides the following information about the board and the ports on the board:

Board Name　　The name of the LANtern NMM.
Port Number　　The number of the port.
Port Status　　The current status of the port. The port status conditions are shown in Table 2-1:

Table 2-1.   **Port Status Colors**

Status	Color Code
NLNK (No Link)	Yellow
ON	Green
OFF	Blue
SEG (Segmented)	Red

Two buttons are available from the MMAC Device Panel to change the statistical selections, as follows:

Logical Gauges

The **Logical Gauges** button accesses a menu that allows you to select the statistic represented by the horizontal bar gauges for the overall board or individual port on a MIM in a logical MIM representation. The statistical selections are as follows:

Frames
Indicates the amount of frames received or transmitted by the board or port.

Bytes
Indicates the amount of bytes received or transmitted by the board or port.

Total_Colls
Indicates the total amount of collisions detected by the board or port.

Recv_Colls
Indicates the amount of collisions received by the board or port.

Trans_Colls
Indicates the amount of collisions generated by the board or port during transmission.

Total_Errors
Indicates the amount of errors detected by the board or port.

Align_Errors
Indicates the amount of misaligned packets detected by the board or port.

CRC_Errors
Indicates the amount of packets received by the board or port with bad Cyclic Redundancy Checks (CRCs).

Runts
Indicates the amount of runt packets received by the board or port. A runt packet is one byte less than the standard Ethernet frame of 64 bytes not including the preamble.

Giants
Indicates the amount of giant packets received by the board or port. A giant packet exceeds 1518 bytes not including the preamble.

OutofWindow
Indicates the amount of collisions out of the standard window (51.2μs) due to a network problem.

The horizontal bar gauge changes color depending on the statistic represented, as shown in Table 2-2:

Table 2-2.   **Statistic Gauge Colors**

Statistical Selection	Gauge Colors
Frames	Light Blue
Bytes	Blue
Total_Colls	Yellow
Recv_Colls	Dark Green
Trans_Colls	Purple
Total_Errors	Orange
Align_Errors	Lavender
CRC_Errors	Blue Green
Runts	Light Purple
Giants	Pink
OutofWindows	Salmon

Gauge Mode

The **Gauge Mode** button allows you to change the gauge representation of the selected statistic, as follows:

Percentages
Displays the selected statistic as a percentage of the total statistic for the MIM.

Rates
Displays the selected statistic as a rate over a given time frame.

Figure 2-2. **Logical MIM Representation of a LANtern NMMin a Cabletron IRM2 or IRBM Hub Device View**
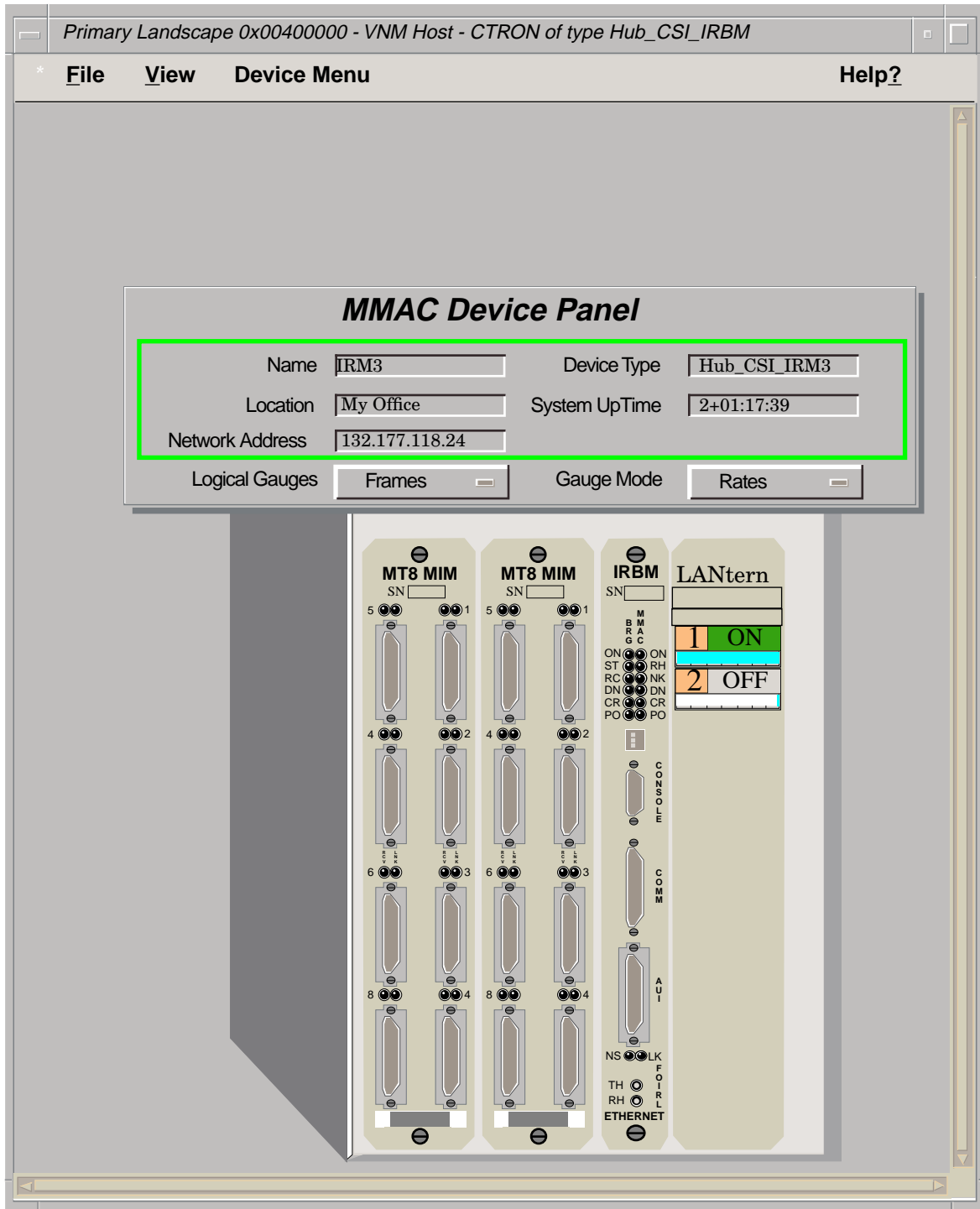
LANtern NMM Physical MIM Representation

The physical MIMs representation of the LANtern NMM shows the board, its LEDs, and other physical features. Figure 2-3 shows an example of an IRM2 or IRBM hub Device View in a physical MIM representation. Figure 2-4 shows a detailed example of the LANtern NMM's physical representation.

Figure 2-3.   Physical MIM Representation of a LANtern NMM in a Cabletron Hub Device View
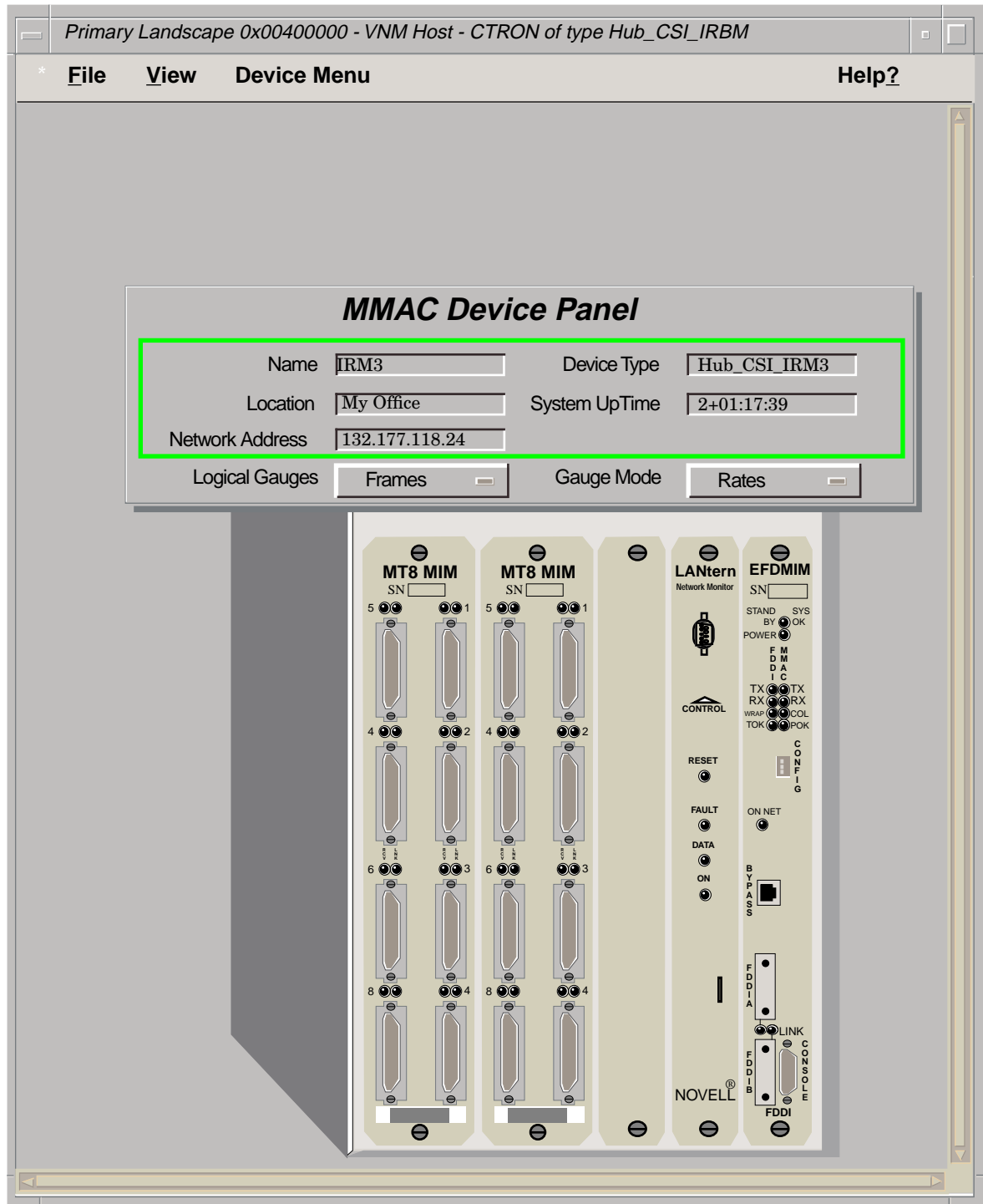
Figure 2-4.   Detail of the LANtern NMM's Device View Physical Representation

LANtern NMM LEDs

The LANtern NMM supports LEDs that indicate the board's operating status, network monitoring status, and power. Figure 2-4 details the physical presentation of the LANtern NMM, with its LEDs.

There are three LEDs on the front of the LANtern NMM as follows:

Fault
This LED indicates that the LANtern NMM has failed a diagnostic self test
and may be damaged.

Data
This LED indicates that packets have been detected on the network segment
the LANtern NMM is monitoring.

On
This LED indicates that the LANtern NMM is receiving power from the hub
chassis.

For more information on LANtern NMM LEDs, refer to your LANtern NMM
installation documentation.

IRM (SIRM or CIRM) Hub Device Views

An IRM (SNMP or Cabletron Proprietary Protocol) hub Device View
containing a LANtern NMM, has identical logical and physical MIM
representations as the Device Views for IRM2 or IRBM hubs. The top portion
of this Device View, the MMAC Device Statistics Panel, is different than the
MMAC Device Panel for IRM2 or IRBM hubs and is described in the following
section.

MMAC Device Statistics Panel

The top portion of an IRM2 or IRBM hub Device View containing the LANtern
NMM, displays Frame Rate and Collision Rate information for the hub. Each
rate is color coded to correspond to the Multi-Attribute Line Graph.
Figure 2-5 shows an example on an SIRM or CIRM MMAC Device Statistics
Panel.

Figure 2-5. **The MMAC Device Statistics Panel**
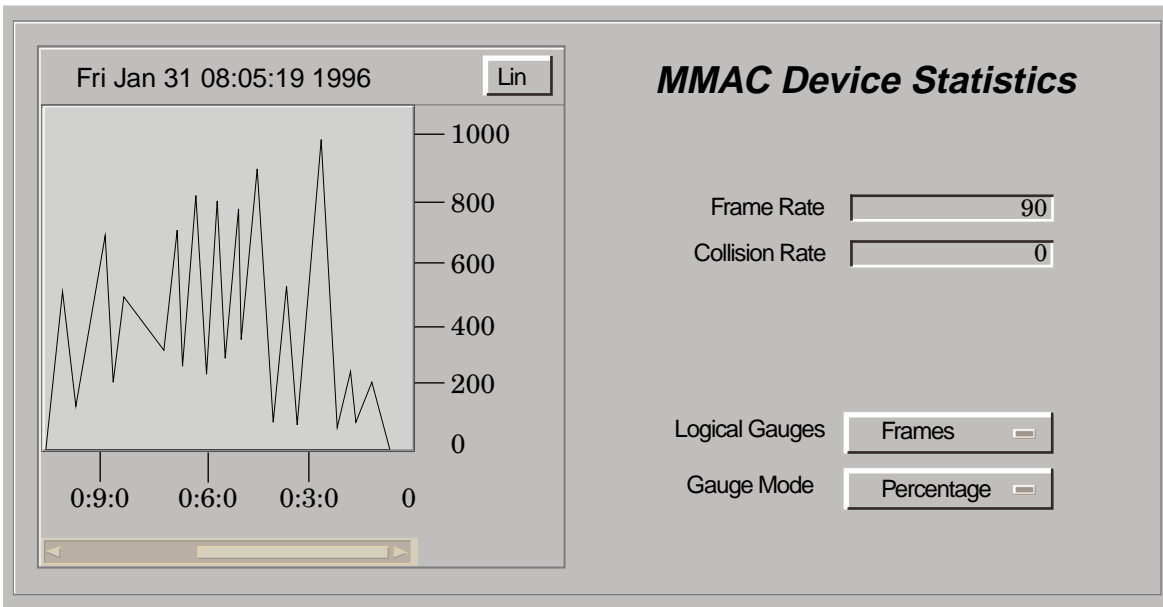
Three buttons are available from the MMAC Device Statistics Panel to change the statistical presentation of the Multi-Attribute Line Graph or the logical MIM horizontal bar gauges, as follows:

Log/Lin

The **Log/Lin** button toggles between a linear or logarithmic scale presentation of the graph.

Logical Gauges

The **Logical Gauges** button accesses a menu that allows you to select the statistic represented by the horizontal bar gauges for the overall board or individual port on a MIM in a logical MIM representation. The statistical selections are as follows:

Frames
Indicates the amount of frames received or transmitted by the board or port.

Collisions
Indicates the total amount of collisions detected by the board or port.

The horizontal bar gauge changes color depending on the statistic represented, as shown in Table 2-3:

Table 2-3. **Logical Gauge Colors**

Statistical Selection	Gauge Color
Frames	Light Blue
Collisions	Yellow

Gauge Mode

The **Gauge Mode** button allows the user to change the gauge representation of the selected statistic, as follows:

Percentage
Displays the selected statistic as a percentage of the total statistic for the MIM.

Rate
Displays the selected statistic as a rate over a given time frame.

Changing MIM Representations

You can change the MIM representation of the entire hub or the MIM representation for the LANtern NMM installed in the hub. Read the applicable section that follows.

Changing MIM Representations on the Entire Hub

To change the MIM representation of the entire hub's Device View, do the following:

1. Select the **Device Menu** menu.

2. Click on either the **Display Physical MIMs** or **Display Logical MIMs** menu option.

The entire hub changes to the selected MIM presentation.

Changing LANtern NMM Representation Using the Menu Bar

To change the MIM representation of the LANtern NMM using the menu bar, do the following:

1. Move the mouse pointer onto the LANtern NMM. Single click the left mouse button to highlight the LANtern NMM.

2. Select the View menu, and select the Icon Subviews submenu. Select either the **Go Physical** or **Go Logical** menu option from this submenu.

3. The LANtern NMM changes its MIM representation. A selected single MIM appears to extend from the hub chassis.

Changing LANtern NMM Representations Using the Mouse

To change the MIM presentation of the LANtern NMM, using the mouse, do the following:

1. Move the mouse pointer onto the LANtern NMM.
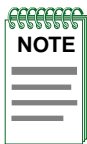
> **NOTE**
>
> *Make sure that the mouse pointer is not on top of or next to a gauge or port connector (depending on the initial MIM representation), otherwise a Port Performance View will open.*

2. Double click the left mouse button.

3. The LANtern NMM changes its MIM presentation. A selected single MIM appears to extend from the hub chassis.

Clearing Duplicate Address Alarms for the LANtern NMM

If you have previously created a stand alone LANtern NMM icon and have created an IRM or IRBM hub icon and configured the LANtern NMM installed in that hub through the hub's Device View, a duplicate address alarm condition (yellow alert) now exists between both LANtern NMM icons. This occurs because SPECTRUM views both the independent LANtern NMM icon and the LANtern NMM installed in the hub icon as separate devices with the same assigned IP address. To alleviate this alarm condition, you must clear the duplicate alarm.

> **NOTE**
>
> *Although yellow alarm conditions are minor alerts, Cabletron recommends clearing these alarms when they occur.*

Two methods exist for clearing this yellow alarm condition depending on the procedural order in which you created the independent LANtern NMM icon and configured the LANtern NMM in the IRM or IRBM hub Device View. The particular LANtern NMM showing the duplicate IP address yellow alarm condition depends on which LANtern NMM was created or configured first. The following sections describe the two possible ways of creating LANtern NMMs and how to clear the resulting duplicate alarms.

Case #1

1. Create the independent LANtern NMM (NA_Nov_LANMIM) icon.

2. Create the IRM or IRBM hub icon which contains the LANtern NMM.

3. Configure the LANtern NMM in the hub's Device View.

If you followed the above procedure, you can clear the duplicate address alarm as follows:

1. Go into the hub's Device View containing the LANtern NMM.

2. Click on the LANtern NMM.

3. Select **Icon Subviews** from the View menu.

4. Select **MIM Diagnostic View** to access the LANtern NMM Diagnostic View.

5. Select **Alarms** from the LANtern NMM Diagnostic View. The Alarm View displays an alarm icon for the LANtern NMM installed in the hub with a yellow alarm contact status color. The Symptom/Probable Cause box displays a DUPLICATE IP ADDRESS message.

6. Select the **Clear** button to clear the alarm. The Alarm View clears and you can now exit from this view.

Case #2

1. Create the IRM or IRBM hub icon which contains the LANtern NMM.

2. Configure the LANtern NMM in the hub's Device View.

3. Create the independent LANtern NMM (NA_Nov_LANMIM) icon.

If you followed the above procedure, the LANtern NMM (NA_Nov_LANMIM) icon appears with a yellow alarm contact status in the Topology View. You can clear the duplicate address alarm as follows:

1. Click on the stand alone LANtern NMM (NA_Nov_LANMIM) icon.

2. Select **Icon Subviews** from the View menu.

3. Select **Diagnostic** from the Icon Subviews menu to access the LANtern NMM Diagnostic View.

4. Select **Alarms** from the LANtern NMM Diagnostic View. The Alarm View displays two alarm icons for the independent LANtern NMM icon each with a yellow alarm contact status color. The Symptom/Probable Cause box displays DUPLICATE IP ADDRESS and DUPLICATE-PHYSICAL ADDRESS messages respectively.

5. Select the **Clear** button to clear each of these alarms. The Alarm View clears and you can now exit from this view.

LANtern NMM Generic Views

To access the LANtern NMM Configuration, Diagnostic, Application, and Performance Views while in a hub Device View, do the following:

1. Single click on the LANtern NMM physical or logical representation to highlight it.

2. Select **Icon Subviews** from the View menu.

3. Select the generic view of interest.

> **NOTE**
>
> *The LANtern NMM Configuration, Diagnostic, Application, and Performance Views can also be accessed from the independent LANtern NMM icon (NA_Nov_LANMIM).*

To access the LANtern NMM Port Performance View while in a hub Device View, do the following:

1. Single click on the port of interest in the LANtern NMM logical representation to highlight it.

2. Select **Icon Subviews** from the View menu.

3. Select **Port Performance View**.

Chapter 3

Configuration View

The Configuration View contains more detailed network configuration information for the Novell LANtern Network Monitor and LANtern NMM. It also allows you to configure the polling cycles to the NA_Nov_LANtern or NA_Nov_LANMIM model in the VNM database. The Configuration View contains five buttons, as follows:

Reset LANtern

The **Reset LANtern** button accesses the Reset LANtern Configuration View allowing you to reset the Novell LANtern or LANtern NMM.

Client Access

The **Client Access** button accesses the Client Table. The Client Table allows you to specify station (client) access to your Novell LANtern or LANtern NMM.

NOTE
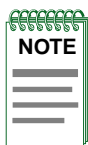
When modifying the Client Table, do not delete the default IP address (0.0.0.0) unless there are other IP address entries present with a valid mask of 255.255.255.255. Otherwise, you will have to reset the Novell LANtern or LANtern NMM because they will hang.

Trap Notification

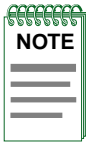The **Trap Notification** button accesses the Trap Notification Table. The Trap Notification Table allows you to specify the stations that will receive trap messages.

> **NOTE**
>
> *To specify a station in the Trap Notification Table to receive trap messages, the station must also be specified in the Client Table.*

Stations specified to receive trap messages can be designated as either primary or backup stations, as follows:

To specify a primary or backup station to receive trap messages, follow these steps:

1. Navigate to the Trap Notification Table.

2. Select **Update** from the File menu.

3. Enter the IP Address of the primary or backup station you want to receive trap messages in the New Notification IP Address field.

4. Select **Close/Update** from the File menu.

5. Click **OK** at the **Save Updated Information?** prompt.

6. Click the **Select Parameters** button.

7. Specify the following parameters:

Notification Status	Select either primary or backup. (The default is primary.)
Notification Retries	Select the number of times the trap message will be transmitted — 2, 4, 8, or 10. (The default is 2.)
Notification Timeout	Select the time interval for confirmation of trap message reception — 10 seconds, 30 seconds, 45 seconds, or 1 minute. (The default is 10 seconds.)

8. Specify the traps you are interested in receiving from the Trap Mask list using the **File/Update** feature described above.

9. Specify the traps you are interested in confirming from the Confirm Mask list using the **File/Update** feature described above.

If you are specifying a backup station, follow these additional steps:

10. Click the Set Notification Backup IP Address button.

11. Enter the backup station's IP Address in the IP Address Notification window using the File/Update feature described above.

Set Alarms

The **Set Alarms** button accesses the Alarm Table. The Alarm Table allows you to set up alarm table thresholds for the Novell LANtern or LANtern NMM.

Download Firmware

The **DownLoad Firmware** button accesses the Download Configuration View. The Download Configuration View allows you to download firmware to the Novell LANtern or LANtern NMM.

⚠ **CAUTION**

Resetting or powering down the Novell LANtern or LANtern NMM when downloading firmware using the DownLoad Configuration View will destroy the Novell LANtern or LANtern NMM firmware.

Enabling the MAC to IP Address Table and Duplicate IP Address Table

As stated in the section titled "Application View," you must activate the MAC to IP Address Table and the Duplicate IP Table found in the Novell LANtern or LANtern NMM Application View, through the Novell LANtern or LANtern NMM Configuration View as follows:

1. Access the Novell LANtern or LANtern NMM Configuration View by either double-clicking on the Configuration View zone of the icon or selecting **Configuration** from the Icon Subviews menu option in the View menu.

2. Select **Update** from the File menu.

3. Select **Enable** from the Duplicate IP Checking button.

4. Select **Close/Update** from the File menu.

5. Click on the **Reset LANtern** button.

6. Select **Update** from the File menu.

7. Click on **warmStart** in the Reset LANtern Configuration View.

8.   Select **Close/Update** from the File menu.

The MAC to IP Address Table and the Duplicate IP Table found in the Novell LANtern or LANtern NMM Application View are now enabled. The IP Address Checking status field in the MAC to IP Address Table and the Duplicate Checking status field in the Duplicate IP Table will both read **Enabled**.

Event and Alarm Messages

What is in this Chapter

This chapter describes the events and alarms that Novell LANtern devices generate. Events and alarms originate as unsolicited Simple Network Management Protocol (SNMP) messages known as traps. SPECTRUM translates these traps as events and displays them in the Event Log. If SPECTRUM maps an event to an alarm, the event will also appear in the Alarm View as an alarm. (For more information on specific SNMP traps, refer to RFC 1213, available through the Internet system. Also refer to the Management Information Base (MIB) documentation for the Cabletron proprietary devices.)

Events and Alarms

SPECTRUM supports the following events and alarms. The event message files are in the following directory:

/SPECTRUM Directory Path/SG-Support/CsEvFormat

The alarm message files are in the following directory:

/SPECTRUM Directory Path/SG-Support/CsPCause

Table 4-1 lists the generic events and alarms for devices supported by the Novell LANtern Network Monitor and NMM Management Module. A full listing of events and alarms can be found in the directories listed above.

Table 4-1. **Events and Alarms**

Event Message	Probable Cause Message
00010007 A LANtern network monitor {v} name {v}, has reported a Cable Failure. The eMediaStatus is {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	00010007 The model's Contact Status attribute has been initialized with the value found in the data base.
00010008 A LANtern network monitor {v} name {v} has received an echo response to a proxy ping from {v}. Ping duration was {v} hundredths of a second. adminTrapHandle = {v}. adminDateAndTime = {v}.	00010008 Not Applicable.
00010009 A LANtern network monitor {v} name {v} has detected a duplicate IP address {v}. Good MAC address is {v}, bad MAC address is {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	00010009 Device hardware failure, Cable between device and upstream neighbor broken, power failure, Incorrect network address, device firmware failure.
0001000a A LANtern network monitor {v} name {v}, has reported a utilizationAlarm. eAlarmType = {v}, eAlarmValue = {v}, eAlarmLowThreshold = {v}, eAlarmHighThreshold = {v}, and eAlarmSampleTime = {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	0001000a Not Applicable.
0001000b A LANtern network monitor {v} name {v}, has reported an errorsAlarm. eAlarmType = {v}, eAlarmValue = {v}, eAlarmLowThreshold = {v}, eAlarmHighThreshold = {v}, and eAlarmSampleTime = {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	0001000b Not Applicable.

Table 4-1. **Events and Alarms (Continued)**

0001000c	0001000c
A LANtern network monitor {v} name {v}, has reported a broadcastsAlarm. eAlarmType = {v}, eAlarmValue = {v}, eAlarmLowThreshold = {v}, eAlarmHighThreshold = {v}, and eAlarmSampleTime = {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	Loose cable connection.
0001000d	0001000d
A LANtern network monitor {v} name {v}, has reported a collisionsAlarm. eAlarmType = {v}, eAlarmValue = {v}, eAlarmLowThreshold = {v}, eAlarmHighThreshold = {v}, and eAlarmSampleTime = {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	Excessive hard errors detected by device. These errors include out-of-window collisions.
0001000e	0001000e
A LANtern network monitor {v} name {v}, has reported a stationInactive. Station MAC address is {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	Excessive soft errors detected by device. The soft errors include CRC and alignment errors, runts and giants.
0001000f	0001000f
A LANtern network monitor {v} name {v}, has reported a stationActive. Station MAC address is {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	Excessive traffic detected on the network.
00010011	00010011
A(n) {v} device, named {v} has been warm started. adminPowerOffTime = {v}. adminTrapHandle = {v}.adminDateAndTime = {v}.	All models that this Media Segment Model is connected to are unreachable by the VNM. Check the status of all the children of the Media Segment Model.

Table 4-1. **Events and Alarms (Continued)**

00010012 A(n) {v} device, named {v}, has detected an Authentication Failure. adminUnauthorizedIPAddress = {v}, adminUnauthorizedCommunity = {v}. adminTrapHandle = {v}. adminDateAndTime = {v}.	00010012 Authorization failure. Other user is trying to connect to device with an invalid community string. This network model is lost because all the models in the network are lost. Check the status of the devices in this network.
00010203 The model created is not the same type as the device. Model type = {v}, Name = {v}, User = {v}.	00010203 The model created is not the same type as the device.
00010306 A(n) {v} device, named {v}, has been cold started.	00010306 Not Applicable.
00010308 A(n) {v} device, named {v}, has detected a commumication Link Down.	00010308 Communication link is down.
00010309 A(n) {v} device, named {v}, has detected a communication Link Up.	00010309 Not Applicable.
0001030b A(n) {v} device, named {v}, has detected an EGP Neighbor or loss.	0001030b Lost contact with EGP neighbor.
00010401 Device {v} of type {v} is created with an IP address already used by another model.	00010401 DUPLICATE IP ADDRESS The model has the same IP address as that of some other Model.

Table 4-1. **Events and Alarms (Continued)**

00010402 Device {v} of type {v} is created with a physical (Mac) address already used by another model.	00010402 DUPLICATE PHYSICAL ADDRESS The model has the same Physical address (Mac address) as that of some other model.
00010605 New source address {X 5} (Instance ID {0 6}) detected by {t} (name - {m}) on port {I 3} (Instance ID {0 4}) of board in slot {I 1} (Instance ID {0 2}).	00010605 Not Applicable.

Application View

The Application View contains basic network monitoring information for the LANtern Network Monitor or LANtern NMM.

Application View Buttons

The Application View contains seven buttons that lead to the Remote PING utility and the Novell LANtern and LANtern NMM tables, as follows:

Remote PING

The **Remote PING** button accesses the Remote PING View. Remote PING allows you to ping a device not on your network segment through the LANtern or LANtern NMM monitoring that segment. To execute a Remote PING, follow these steps:

1. Select **Update** from the File menu in the Remote PING View.

2. Enter the IP addresses for your device and the remote device.

3. Select **Close/Update** from the File menu.

4. Click **OK** at the **Save Updated Information?** prompt.

The ping is executed automatically and the results will appear in your Event Log file.

MAC to IP Address Table

The **MAC to IP Address Table** button accesses the MAC to IP Address Table. This table cross-references device IP addresses to device MAC (Ethernet) addresses on your network segment.

Duplicate IP Table

The **Duplicate IP Table** button accesses the Duplicate IP Table. This table lists any stations that the Novell LANtern or LANtern NMM has detected with a duplicate IP address on your network segment.

NOTE
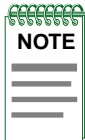
The functionality available in the MAC to IP Address Table and the Duplicate IP Table must first be enabled through the Novell LANtern or LANtern NMM Configuration View. For instructions on this procedure, refer to Chapter 3, "Configuration View."

Station Table

The **Station Table** button accesses the Station Table. This table gives total traffic statistics (in bytes, packets, errors, and protocols) for each device attached to the segment that the Novell LANtern or LANtern NMM is monitoring. Double clicking on any statistical variable in the Station Table brings up a rate graph for that variable. Double clicking on a vendor code address for a specific device listed in the Station Table brings up a Station Table Information View for that device and allows you to:

- View the device's vendor code address as an Ethernet (hex) address.

- View additional traffic statistics (in bytes, packets, and errors) for that device.

- Bring up a rate graph, through button functions, for that statistic.

- Delete the device (station) from the Station Table list.

- Access the **Station to Station Table** button, which accesses the Station to Station Table for that device. The Station to Station Table provides a cross-reference of other devices transmitting to or receiving transmissions from the specific device you are monitoring. Double-clicking on the specific device's vendor code address brings up an information view for that device that provides additional statistics (in bytes, packets, and errors) for total and current network traffic statistics for that device. This information view also allows you to: view the vendor code address as an Ethernet (hex) address, bring up a rate graph, through button functions,

for that statistic, and delete the station from the Destination-Source Table list.

- Access the **InDirect LANtern Model** button (refer to Chapter 6 for detailed information on the InDirect LANtern Model button).

Destination-Source Table

The **Destination-Source Table** button accesses the Destination-Source Table. The Destination-Source Table provides a complete cross-reference of specific devices that are receiving transmissions and the corresponding devices that are transmitting to these devices over the network segment. Double-clicking on a specific device's vendor code address brings up an information view for that device that provides additional statistics (in bytes, packets, and errors) for total and current transmissions received by that device. This information view also allows you to:

- View the vendor code address as an Ethernet (hex) address.

- Bring up a rate graph, through button functions, for that statistic.

- Delete the device from the Destination-Source Table list.

Source-Destination Table

The **Source-Destination Table** button accesses the Source-Destination Table. The Source-Destination Table provides a complete cross-reference of specific devices that are transmitting and the corresponding devices that are receiving transmissions from these devices over the network segment. Double-clicking on a specific device's vendor code address brings up an information view for that device that provides additional statistics (in bytes, packets, and errors) for total and current transmissions by that device. This information view also allows you to:

- View the vendor code address as an Ethernet (hex) address.

- Bring up a rate graph, through button functions, for that statistic.

- Delete the device from the Source-Destination Table list.

Log Table

The **Log Table** button accesses the Log Table. The Log Table displays detailed network statistical information on the overall operation of the Ethernet segment the LANtern or LANtern NMM is monitoring. These statistics are displayed over a user-defined Log Interval. The Log Interval is specified in the Configuration View and can be changed using the **Update** feature in the File menu.

Organizing Ethernet Addresses

As a means of organizing device Ethernet addresses, the Application View includes a field for creating a file to store specific device addresses. As the LANtern or LANtern NMM monitors devices on a network segment and adds their addresses to a table, the tables can become extremely lengthy. By default, the first 500 addresses in any table are displayed. The address filename feature allows the user to specify a file to contain a shorter table with only the Ethernet addresses of particular devices that the user wants to monitor. To create a device address file, follow these steps:

1. Create an ASCII file using a UNIX text editor.

2. Enter the Ethernet addresses of the devices you want to monitor.

3. Navigate to the LANtern or LANtern NMM Application View.

4. Select **Update** from the File menu.

5. Enter the ASCII filename and its complete path in the File Name field.

6. Select **Close/Update** from the File menu.

7. Click **OK** at the **Save Updated Information?** prompt.

Columns that have been sorted will remain sorted as the table is updated. This file is used by default when selecting that particular Application View table.

The Instance Count

You can specify the default number of Ethernet addresses displayed in a table by changing the value in the **Instance_Count** field, as follows:

1. Select **Update** from the File menu.

2. Enter the number of Ethernet addresses you want to display.

The **Instance_Count** field initially reads zero, which is the default table display setting of 500.

3. Select **Close/Update** from the File menu.

4. Click **OK** at the **Save Updated Information?** prompt.

Organizing Application View Tables

Application View tables provide scroll bars which allow the user to move anywhere in the table and provide the following organizational functions:

Sort

You can sort columns in a table incrementally using the **Sort** button as follows:

1. Single-click on the particular column label.

The **Sort** button appears at the top of the table.

2. Single-click on the **Sort** button to sort that particular column.

Ethernet (hex) device addresses are sorted in ascending order. Statistical information is sorted in descending order.

Columns that have been sorted will remain sorted as the table is updated.

Find

You can locate a particular Ethernet device address entry in a table column using the **Find** button as follows:

1. Single-click on the particular column label. The **Find** button appears at the top of the table.

2. Single-click on the **Find** button. A text entry box appears.

3. Enter the Ethernet device address in the text entry box.

4. Click **OK**.

If the address is in that table column, it will be highlighted. If the address is not in the table an "Item not found in Table" message appears.

The Update Timing Interval

You can specify the timing interval by which SPECTRUM updates tables as follows:

1. Select **Edit** from the File menu.

2. Select **View ' Timing** from the Edit menu.

3. Enter the timing interval in milliseconds (1000 milliseconds = 1 second).

Updating Tables

SPECTRUM can update Application View tables automatically, or you can update them manually, as follows:

1. Select **Update** from the File menu in the Application View.

2. Select either **Automatic** or **Manual** (the default is **Manual**).

3. Select **Close/Update** from the File menu.

4. Click **OK** at the **Save Updated Information?** prompt.

If you select **Automatic**, the table is updated according to the specified update timing interval.

If you select **Manual**, an **Update** button appears on each Application View table. To update the table, single-click on the button.

The Indirect Lantern Icon

The InDirect LANtern icon allows a network administrator to model any device that the Novell LANtern Network Monitor or LANtern NMM is monitoring on an Ethernet segment but is not directly available from SPECTRUM's currently supported model types. The device can then be managed through SPECTRUM with the InDirect LANtern icon.

Creating the Indirect LANtern Icon

The InDirect LANtern icon is created from the LANtern Network Monitor or LANtern NMM Application View. To create an InDirect LANtern icon, follow these steps:

1. Select **Icon Subviews** from the File menu.

2. Select **Application** from the Icon Subviews to navigate to the Application View for the LANtern Network Monitor or LANtern NMM.

3. Select the **Station Table** button to navigate to the LANtern Network Monitor or LANtern NMM Station Table.

4. Double-click on the MAC address of the device you want to model that is not directly supported through SPECTRUM. The LANtern Network Monitor or LANtern NMM Station Table Information View appears.

5. Select the **InDirect LANtern Model** button. An Add Options Dialog Box appears.

6. Select the **IndrctLANtern** model type from the Add Options Dialog Box and click **OK**. A Creating IndrctLANtern Dialog Box appears.

   Enter the following information:

   Model Name   Assign a name (preferably unique) that identifies the device modeled with the InDirect LANtern icon.

Location	Enter the physical location of the device modeled with the InDirect LANtern icon (i.e., building, site, room, etc.).
Contact	Enter the name of the individual responsible for maintaining the device modeled by the InDirect LANtern icon.
Polling Interval	The time interval, in seconds, for polling any attributes that have been flagged as "POLLED." The default Polling Interval value is 60 seconds.
Logging Ratio	Enter the number of poll cycles that must be achieved before the SpectroSERVER writes to the statistical database any attributes that have been flagged as "LOGGED." The default value is 10.

7. After entering the InDirect LANtern icon parameter information, click **OK**.

SPECTRUM creates the InDirect LANtern icon and places it into the Lost and Found View.

Placing the Indirect LANtern Icon into a SPECTRUM View

To place an InDirect LANtern icon into a SPECTRUM view, follow these steps:

1. Select **New View** from the View menu.

2. Select **Lost & Found** from the New View menu to navigate to the Lost and Found View.

3. Select the InDirect LANtern from the Model Name/Model Type list by double-clicking on the entry. The InDirect LANtern icon appears.

4. Select **Edit** from the File menu.

5. Click on the InDirect LANtern icon to highlight it.

6. Select **Cut** from the Edit menu and click **OK** at the **Are You Sure?** prompt.

7. Navigate to the SPECTRUM view where you want to place the InDirect LANtern icon.

8. Select **Edit** from the File menu.

9. Select **Paste** from the Edit menu.

The icon representing the InDirect LANtern device appears in the center of the window. You can move the icon to another area of the window by dragging it with the left mouse button while still in Edit mode.
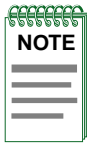
> **NOTE**
>
> *The SPECTRUM views to which an InDirect LANtern icon can be added, are identical to those available for the corresponding LANtern Network Monitor or LANtern NMM model type icons (Location, Topology, or Off-Page Reference).*

Appendix A

Statistical Reports

This appendix describes the Report Format (.rib) files included with the Novell LANtern management module. These .rib files allow you to generate reports which monitor network activity and network entity relations. The network administrator sets up reports for each model type (not each individual icon) to record network activity and device performance over a specified period. You can generate more than one Report Format file for a single model type, allowing you to access a variety of information on a single model type.

Report generation files are located in the directory pointed to by the <CsRib path>, which is designated in either your .Xdefaults or app-defaults files.

The Novell LANtern and LANtern NMM module supports the generation of Statistical reports. This type of report presents information from the statistical database, maintained by the SpectroSERVER. This report can be made for a specific user-selectable date-time period. In order to generate a statistical report, you must select a specific icon prior to making this menu selection. The available Statistical reports are in subdirectories for each model type within the CsRib directory.

NOTE

Relational Reports and Fixed Reports are supported for the LANtern and LANtern NMM model types. These reports are not management module specific.

Sample Report Output File

The following provides an example of a Statistical Report output file for both the LANtern and LANtern NMM.

```
NA_Nov_LANtern Performance Report                Page : 1


From Tue Feb 26 10:18:00 1991      To Tue Feb 26 10:28:00 1991

Internet Addr          Model Name
132.177.118.24         JASLantern

Poll Time     Good Packets  Local Collisions      Errors
------------------------------------------------------------------
10:22:05       50503         14                    28
10:24:36       59329         20                    2
10:27:05       59763         38                    54
-------------------------------------------------------------Totals
         16959           72                    110
```

Statistical Report Filename

This section lists the directory and specific filenames for generating statistical reports for the NA_Nov_LANtern and NA_Nov_LANMIM model types. The paths for these Report Format files are as follows:

Model Name	/Path name/Filename
NA_Nov_LANtern	<CsRib path>/NA_Nov_LANtern/LANtern.rib
NA_Nov_LANMIM	<CsRib path>/NA_Nov_LANMIM/LANMIM.rib
IndrctLANtern	<CsRib path>/IndrctLANtern/IndrctLANtern.rib

Index

Symbols

A

B

C

D

E

F

G

H

S

Set Alarms 3-3
SIRM or CIRM 2-11
Sort 5-5
Source-Destination Table 5-3
SpectroSERVER database 2-2
stand alone 2-14
Station Table 5-2
Station to Station Table 5-2

T

TCP/IP Based Networks xi
Terminology x
Trademarks i
traffic statistics 5-2
Trap Notification 3-2
Trap Notification Table 3-2

U

Update 5-3
Update Timing Interval 5-5
Updating Tables 5-5

V

Virus Disclaimer i

W, X

No entries for these letters.

Y

yellow alert 2-14

Z

No entries for this letter.